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Knowledge, Awareness &Attitude of Dental Personnel Towards Fixed Dental Prosthetic Procedures Amid Covid19 Across India.

[1]Dr. V. Chakradhar, Postgraduate student, Department of Prosthodontics, Lenora Institute of Dental Sciences.

[2]Dr. B.Lakshmana Rao, Professor & Head, Department of Prosthodontics, Lenora Institute of Dental Sciences.

[3]Dr. Nibha kumari singh, Reader, Department of Prosthodontics, Lenora Institute of Dental Sciences.

[4]Dr. S.Sirisha, Senior Lecturer, Department of Prosthodontics, Lenora Institute of Dental Sciences.

[5]Dr. Y. S. S. Sruthi, Senior Lecturer, Department of Prosthodontics, Lenora Institute of Dental Sciences.

[6]Dr. PSHL Parvathi, Postgraduate student, Department of Prosthodontics, Lenora Institute of Dental Sciences.

Corresponding Author: Dr. B. Lakshmana Rao, Professor & Head, Department of Prosthodontics, Lenora Institute of Dental Sciences.

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Abstract

Objective: The aim of this study was to assess Knowledge, awareness &Attitude of dental personnel towards aerosol-generating fixed dental prosthetic procedures amid covid19 in India **.**

Materials and Methods: A total of 960 dentists participated in this cross-sectional survey. A self-administered, multiple-choice type questionnaire of 33 questions (verified by a specialist) was administered to obtain information from the subjects. Statistical analysis was done using the Chi-square test.

Results: The percentage of subjects who answered correctly regarding the main and primary mode of transmission was 87.5%. A majority of participants don't like to opt for aerosol producing procedures during COVID 19. 85.4% dentists aware that the fixed prosthetic procedures don't come under emergency treatment.71.7% dentists advised using rubber dam like isolation protocols during fixed prosthetic procedures. The percentage of dentists disinfecting impressions and stone casts increased from 65.4% to 96.7% during this pandemic.

Conclusion: Indian dentists were aware of COVID-19 symptoms, mode of transmission, infection control, and measures in dental clinics. The findings of the present study showed that some notable deficiencies in knowledge existed among dental professionals regarding some vital aspects of COVID-19. Therefore, there is an urgent need for improving dentists' knowledge via health education and training programs.

Keywords: Covid -19, SARSCoV-2

Introduction

The novel Coronavirus (Coronavirus Disease, 2019 & SARSCoV-2) is an emerging virus that started its first outbreak in December 2019 in Wuhan, China.[1] SARS-CoV–2, a single-stranded RNA beta coronavirus, has been identified as the cause of the disease known as COVID–19. It is a highly infectious disease, and its clinical symptoms include fever, dry cough, fatigue, and myalgia and, in severe cases, progressing to acute respiratory distress syndrome leading to bleeding and coagulation dysfunction. According to WHO, elderly people >60 yrs of age leads the risky group, and people of all ages with pre-existing medical conditions (such as diabetes, high blood pressure, heart disease, lung disease, or cancer) appear to develop serious illness more often than others. The main routes of transmission include contact or by respiratory droplets. In addition, aerosol and oral spread have been suggested as possible routes of transmission. Routine dentistry frequently involves aerosol-generating procedures.[2] Therefore it has been proposed that the dental team may be at increased risk of infection, and dental care itself may be a route for transmission of SARS-CoV–2 within the community.[3] COVID 19 has become one of the serious concern of public health because of its rapid spread, transmissibility, mortality rate.

Amid COVID 19 because of the risk involved in the aerosol producing dental procedures; this study surveyed the awareness, knowledge, and attitude of the dental personnel towards aerosol producing procedures (including fixed prosthetic treatment options like FPD, and implants) during this pandemic situation.

Materials And Methods

A prospective cross-sectional study aimed to study the knowledge, awareness, and attitude of interns, postgraduate students, faculty, and private practitioners towards fixed dental prostheses amid covid19.

A total of 960 responses were recorded, all over India through the web-based survey.

Study Population

Our study population consisted of dentists and dental students who work or study in India, regardless of their place, in either private clinics, hospitals, or health centers, Dental colleges. This survey was conducted from 16th June 2020 to 27th June 2020. Responses received after 27th June were not included in the study. An online questionnaire using Google Forms was used to collect the data. The survey was openly distributed through messaging apps and dental social media channels all around India. These questionnaires maintain the privacy and confidentiality of all information collected in the study.

Study Methods

As the transmissibility of covid19 is due to contact and droplets, we opted for the web-based questionnaire via Google forms. The questionnaire was designed in English and comprised of a 33 series of questions pertaining to socio-demographic characteristics, the knowledge of dentists toward COVID-19, and their attitudes and perceptions towards fixed partial denture amid COVID 19. Electronic surveys are straightforward for respondents, mitigate the risk of data loss, and facilitate data transfer and analysis. Web-based platforms have been used previously to capture data from health care professionals (HCP). This web-based questionnaire captured reported dental personnel attitude between 16th June 2020 and 27th june 2020.

Data Analysis

Data were analyzed using SPSS (IBM Corp). Calculations were done using descriptive statistical analysis. To find the significance of study parameters between four groups, a Chi-square test was used.

RESULTS

Socio-demographic and professional characteristics

This study included a total of 960 subjects, of which 32.1% are males 67.1% females, and 8% preferred not to say.

The participated subjects are divided into four groups which include 52.5%(504) postgraduates,22.1%(212) interns,20.0%(192) private practitioners and 5.4% (52) dental faculty across India including the states of Andhra Pradesh, Telangana, Maharashtra, Punjab, Orissa, Kerala, Rajasthan, and Uttar Pradesh. Socio-demographic and professional profile of study subjects is depicted in TABLE 1 and groups based on the percentage of participation in TABLE 2.

Table 1

Gender

		Frequency	Percent
Valid	male	308	32.1
	female	644	67.1
	prefer not to say	8	.8
	Total	960	100.0

Table 2

Designation

		Frequency	Percent
Valid	Intern	212	22.1
	Post graduate	504	52.5
	Faculty	52	5.4
	Practitioner	192	20.0
	Total	960	100.0

When questioned about the awareness about the common symptoms and screening test used for COVID 19, more than half of the participants answered the common symptoms like dry cough, fever, respiratory discomfort, loss of olfactory sensation, while the small percentage answered as running nose, diarrhoea, lethargy, and restlessness.

95.8% of the participants choose to perform the screening test to the patients approaching them for the treatment. TABLE 3&4 Preference of screening test for (covid19) the patients approaching for prosthodontic treatment:

Table 3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	920	95.8	95.8	95.8
	no	40	4.2	4.2	100.0
	Total	960	100.0	100.0	

Table 4

Preference of screening test before prosthodontic treatment among the participant groups:

			designation				
			Intern	Post graduate	Faculty	Practitioner	Total
	yes	Count	212	484	52	172	920
		% within q4	23.0%	52.6%	5.7%	18.7%	100.0%
	no	Count	0	20	0	20	40
		% within q4	0.0%	50.0%	0.0%	50.0%	100.0%
Total		Count	212	504	52	192	960
		% within q4	22.1%	52.5%	5.4%	20.0%	100.0%

Chi-square: 30.311 p value- <0.0001**

Among the responses, most preferred screening tests include thermal screening, swab test, RTPCR(Reverse transcription-polymerase chain reaction), VRDL , rapid antigen, and truenat rapid tests.

Knowledge about Modes of transmission Majority of the participants in the survey opt the droplet transmission (87.5%),followed by contact transmission(40.4%) , air borne transmission(33.3%) ,blood transmission(10%).

Attitude Toward Treatment of Patients With COVID-19

Regarding dentists' precautionary actions in the dental clinic,944(98.3%)TABLE5 believed that it was necessary to ask patients to sit far from each other, wear masks while in the waiting room, and wash hands before getting in the dental chair to decrease disease transmission, while 16 (1.7%) believed that this was not necessary. And 544(56.7%) dentists preferred to treat every patient approaching clinic as asymptomatic covid19 patient.

Table 5

Opinion on changing the waiting room seating to follow physical distancing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	944	98.3	98.3	98.3
	no	16	1.7	1.7	100.0
	Total	960	100.0	100.0	

Fixed Prosthetic Treatment and Covid 19

820(85.4%) out of 960 dentists TABLE 6&7 had the awareness that the fixed prosthetic treatment options do not come under emergencies treatment protocol while 6.3% claimed fixed prosthetic treatment as one of the emergency treatment modality remaining 8.3% don't know about the emergencies in the dental treatment planning during this pandemic.

TABLE 6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	60	6.3	6.3	6.3
	no	820	85.4	85.4	91.7
	dont know	80	8.3	8.3	100.0
	Total	960	100.0	100.0	

TABLE 7

			designation				
			Intern	Post graduate	Faculty	Practitioner	Total
	yes	Count	12	16	4	28	60
		% within q10	20.0%	26.7%	6.7%	46.7%	100.0%
	no	Count	176	440	48	156	820
		% within q10	21.5%	53.7%	5.9%	19.0%	100.0%
	dont know	Count	24	48	0	8	80
		% within q10	30.0%	60.0%	0.0%	10.0%	100.0%
Total		Count	212	504	52	192	960
		% within q10	22.1%	52.5%	5.4%	20.0%	100.0%

Chi-square: 41.744 p value- <0.0001**

Nine hundred thirty-six members opted to take special precautions when doing the fixed partial denture and implant cases, of which 71.7% TABLE 8&9 opted to use rubber dam isolation 20.0 % said no and 8.3% said they don't have an idea about that.

Table 8

Rubber dam isolation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	688	71.7	71.7	71.7
	no	192	20.0	20.0	91.7
	dont know	80	8.3	8.3	100.0
	Total	960	100.0	100.0	

Table 9

			designation				
			Intern	Post graduate	Faculty	Practitioner	Total
	yes	Count	156	356	36	140	688
		% within q12	22.7%	51.7%	5.2%	20.3%	100.0%
	no	Count	28	108	12	44	192
		% within q12	14.6%	56.3%	6.3%	22.9%	100.0%
	dont know	Count	28	40	4	8	80
		% within q12	35.0%	50.0%	5.0%	10.0%	100.0%
Total		Count	212	504	52	192	960
		% within q12	22.1%	52.5%	5.4%	20.0%	100.0%

Chi-square: 16.901 p value- 0.01**

87.5% don't like to opt for rotary aerosol producing procedures during this pandemic.12.5% agreed to continue the aerosol procedures. While all the participants agree that aerosols carry infectious microbes. 97.5% opted that they suggest gargling with mouthwash before the dental procedures, and 31.3 % agree that gargling with mouthwash decrease the virus load, and the majority of 50.8% are not sure about that.

Opinion about whether the mouth wash gargling decrease the virus overload among groups:

			designation				
			Intern	Post graduate	Faculty	Practitioner	Total
	yes	Count	56	184	20	40	300
		% within q16	18.7%	61.3%	6.7%	13.3%	100.0%
	no	Count	28	84	8	32	152
		% within q16	18.4%	55.3%	5.3%	21.1%	100.0%
	may be	Count	116	236	24	112	488
		% within q16	23.8%	48.4%	4.9%	23.0%	100.0%
	dont know	Count	12	0	0	8	20
		% within q16	60.0%	0.0%	0.0%	40.0%	100.0%
Total		Count	212	504	52	192	960
		% within q16	22.1%	52.5%	5.4%	20.0%	100.0%

Chi-square: 47.986 p value- <0.0001**

All the participants in the groups agree to wear the personal protection equipment during the prosthetic procedures like hand gloves, mouth mask, eyewear, head cap, bodysuit. While a small percentage of participants (0.4%) think that head cap, mouth mask, and glove pair is sufficient even in this pandemic situation.

83.3% of the participants had the knowledge about the donning and doffing of the personal protective equipment (PPE), learned or trained from video sources (42.6%), and through from special training program (35.9%), government or private organizations and institution's(10.0%) and through social media (11.5%). Many dentists opted to use these PPE kits for every

patient, even if they are asymptomatic to covid19. 97.9% of the total participants thought of handling the impressions and prosthesis which used in a try in phase has an effect on the spreading of the covid19 .of all the participants 46.3% use glutaraldehyde as the routine disinfectant to disinfect impressions and prosthesis followed by sodium hypochlorite 45.8%, and 46.7% of the total participants use sodium hypochlorite solution to wipe the clinical surfaces followed by alcohol-based products and glutaraldehyde. In their regular clinical practice, 65.4% disinfect their impressions and stone casts, which increased to 96.7% after the pandemic, and 3.3 % of participants still not following the disinfection protocol. 81.3% of dentists strictly following the disinfecting protocol even during handling prosthesis from the dental lab.

Discussion

COVID-19's propagation of the pandemic has brought the entire world in a state of emergency as thousands of individuals losing their lives every day because of this life-threatening illness. This survey may be helpful in providing an insight into the Knowledge, awareness &Attitude of dental personnel towards fixed dental prostheses amid covid19 in and across India. This study includes the dentists of various designations from interns, postgraduates of different specialties, faculty, practitioners, divided into four groups. A close-ended questionnaire was used in the study in order to achieve a quicker response from the subjects in this state of crisis.[4] According to demographic data obtained, females were dominant in the sample.

Dentists in this study varied in their knowledge and awareness about the COVID 19, and their attitude differs between the groups. The recommended screening tests before the appointment includes the thermal screening, swab test, RTPCR, antibody test, CT scan, VRDL tests. The common symptoms identified so far include dry cough, fever, respiratory distress, Loss of olfactory sensation, diaarhoea, lethargy. The awareness about these clinical signs & symptoms, modes of transmission of disease, and knowledge about the screening tests was good among all the groups participated in the survey.

Coming to the clinical setup and treatment, the dentist's attitude changed in regard to change the waiting room seating position of the patients and advised them to wear a mask in the waiting area and wash hands before entering the clinical area. 936 out of 960 members opted to take special precautions when doing the fixed partial denture and implant cases still a minority had a limited concern towards personal protection during the treatment procedures. The use of PPE, like masks (N-95), gloves, gowns, and goggles or face shields, is recommended to protect skin and mucosa from (potentially) infected blood or respiratory secretions .[5] 97.5% opted that they suggest to gargle with mouthwash before the dental procedures and 31.3 % agree that gargling with mouthwash decrease the virus load and the majority of 50.8% are not sure about that. So, there is a significant difference between the knowledge of gargling before the dental procedure. Before the pandemic, 65.4% dentists disinfect their impressions and stone casts, which increased to 96.7% after the pandemic, which was a positive sign towards the preventive measures adapting to the practice. In this study, 544(56.7%) dentists preferred to treat every patient approaching the clinic as asymptomatic covid19 patients because of the possibility of disease transmission during incubation periods, during which no symptoms may appear.[6] Recent research has observed that asymptomatic patients and patients in their incubation period are also carriers of this particular virus, which can lead to disease transmission. [7] wiping the clinical area and sterilizing the dental instruments is also a major part in reducing the

transmission of the virus, Coronavirus can persist on surfaces for a few hours or up to several days, depending on the nature of the surface, the temperature, or the humidity of the environment.[8] in the present study 47.5% of the participants using sodium hypochlorite to wipe the clinical area followed by alcohol-based products. Gargling with mouth wash before the dental procedures, treating only the emergency cases and wearing proper personal protection equipment, and changing the treatment planning protocol and adapting to do non-aerosol prosthetic treatments and if necessary, opting to do flapless surgical methods can reduce the wide exposure of virus load to the prosthodontist. Among the reported dentists,39.2% choose to use flapless techniques for dental implants, 8.8% not opted for flapless techniques, and 21.7% had a piece of limited knowledge about those techniques. 91.3 % reported that covid19 had definitely had an effect on the fixed dental procedures, of which 61.9% suggest to change the treatment planning course and procedures for fpd and implants. Based on relevant guidelines and research, dentists should take strict personal protection measures and avoid or minimize operations that may produce droplets or aerosols. A 4-handed technique is useful for infection control, and use of saliva ejectors with low or high volume reduces droplet and aerosol production.[9]

Limitations

Despite the findings introduced here, it is important to stress that this survey had limitations, which includes

1. Moderate sample size, which would be better if it includes a wider range. This could have been caused by the short period of data collection.

2. As amid covid19, the preference of distribution is through the electronic and social media; this could result in selection bias and sampling error, which prevents the ability to generalize our results.

3. The short duration of sample collection.

Conclusion

Indian dentists were aware of COVID-19 symptoms, mode of transmission, infection control, and measures in dental clinics. Guidelines released by reputable institutions (CDC, WHO,DCI)[10] should be sent by the regional

and national dental associations to all registered dentists during a crisis, including this COVID -19 pandemic, to make sure that dentists are well informed and aware of the best practices and recommended disease management approaches. Most of the vaccines against COVID-19 are under design and preparation, and there are some that have entered efficacy evaluation in animals and initial clinical trials. [11]However, it's imperative for dentists to carry on with preventive measures for all their patients, all the time.

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Questionnaire

1. Gender :
   Male
   Female
   Prefer not to say
2. What is your Designation:
   intern
   Post graduate
   faculty
   Practitioner
3. Which state /province do you belong ----------
4. In your view what are the common symptoms of covid19 ----------
5. Do you prefer screening test for (covid19) the patients approaching for prosthodontic treatment?
   Yes
   No
6. Which screening test do you prefer before the dental appointment ----------
7. Do you think of changing the waiting room seating to follow physical distancing?
   Yes
   No
8. Would you prefer to treat every patient as asymptomatic covid19 patient?
   Yes
   No
9. Do you know the mode of transmission of covid19 .
   Droplet transmission
   Air borne
   Blood transmission
   Contact transmission
   Don't know
10. Which type of fixed treatment option do you prefer in this pandemic situation?

Fixed partial denture

Implant

Based on patient's preference

Decide according to the clinical situation

11. Do you think fixed dental prosthetic option comes under emergency treatment?

Yes

No

Don't know about the emergency treatment procedures

12. Do you like to use any special precautions during fpd and implant treatment?

Yes

No

13. Do you prefer to use rubber dam during fixed partial denture procedure ?

Yes

No

Don't know how to use

14. Are you willing for treatments that produce aerosols in this pandemic situation?

Yes

No

15. Did you know the aerosols generated during these procedures carry the infectious microbes

Yes

No

16. Do you suggest the patient to gargle with mouth wash before the fixed dental procedures

Yes

No

17. Do you think mouth wash gargling decrease the virus load

Yes

No

May be

Don't know

18. Do you prefer to use protective equipment during fpd and implant procedures

Yes

No

19. If yes Which type of protective equipment do you prefer during the covid19 (pandemic) conditions

Head cap, Mouth mask and glove only

Face shield & glove only

Protective body gowns

All of the above

Don't know what to use

20. Do you know about donning and doffing of the personal protective equipment (PPE)?

Yes

No

Don't know about donning and doffing procedure

21. If yes, notify the source of learning

Through video source

Through any special training program

Through some institution

Through social media

22. Do you think the protective equipment you selected is must for all the patients even for those who tested negative for covid19?

Yes

No

23. Do you think of handling the impressions (or) the fixed prosthesis which used in try in phase has effect on the spreading of the covid19

Yes

No

24. What is the disinfectant you generally use for disinfection of impressions and prosthesis

Sodium hypochlorite

Glutaraldehyde

Alovera

Other products

25. What do you think the best disinfectant to wipe the clinical area

sodium hypochlorite

Glutaraldehyde

phenols

alcohol based products (like spirit)

26. Do you regularly disinfect the impressions/stone casts

Yes

No

27. Are you disinfect the impressions/stone casts after pandemic

Yes

No

28. Do you disinfect the prosthesis coming from the dental lab?

Yes

No

29. Do you prefer any time gap between the patient-patient appointment in pandemic situation?

Yes

No

30. Do you think the covid19 has effect on the fixed dental treatment procedure?

Yes

No

31. Would you prefer to use flapless surgical methods during the implant procedures?

Yes

No

Maybe

Don't know about those techniques

32. Do you think there is need to change any procedures or treatment planning course for fpd and implant in the covid19 patients?

Yes

No

33. If yes suggest any 2 major modifications --------

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